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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, CHAU T

ART UNIT	PAPER NUMBER
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2176

DATE MAILED: 01/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/454,057

Applicant(s)

DOERENBERG ET AL.

Examiner

Chau Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Response to Official Action, received on 11/14/2005, has been entered. Claims 1-34 are pending.
2. The declaration under 37 CFR 1.132 filed 11/14/2005 is sufficient to overcome the rejection of claims 1-34 based upon Birkedahl et al., US Patent No. 6,133,846 under U.S.C. 103. Therefore, it is effective to withdraw the rejection mailed on 08/10/2005. Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Independent claims 1, 16, 30 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Games et al. (Games), U.S. Patent No 3,755,628 and further in view of Birkedahl et al. (Birkedahl), US Patent No. 5,778,203.

5. As to independent claims 1, 30 and 34, Games discloses a network topology backplane bus architecture comprising:

a plurality of independent data communication lines (col. 3, lines 38-60 and Fig. 2: three channels designated A, B, and C);

a plurality of processing nodes sharing the independent data communication lines for data communication (col. 3, lines 38-60 and Fig. 2: communication units J, K, L and M, and each unit links to three channels);

dividing a plurality of data communication lines into mutually exclusive first and second subsets of data communication lines (col. 3, lines 38-60 and Fig. 2: three channels designated A, B, and C);

one of the processing nodes being normally connected for both transmitting and receiving on a first subset of the data communication lines and receiving on a second subset of the data communication lines (col. 3, lines 38-60, col. 5, line 24 – col. 6, line 67, and Fig. 3) ; and

another of the processing nodes being normally connected for both transmitting and receiving on the second subset of the data lines and receiving on the first subset of the data lines (col. 3, lines 38-60, col. 5, line 24 – col. 6, line 67, and Fig. 3).

However, Games does not explicitly disclose one of the processing nodes being normally connected for only receiving on a second subset of data communication lines and another of said processing nodes being normally connected for only receiving on said first subset of said data lines. Birkedahl discloses in the Abstract, col. 4, lines 6-29 and Fig. 1: module units 12A, 12B, 12E, 12F, and 12G (processing nodes) connect to

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bus 11A (first subset) for transmitting and receiving data, and the module units 12A, 12B, 12E, 12F, and 12G connect to bus 11B (second subset) for receiving data only; module units 12C, 12D, 12H and 12I connect to bus 11B (second subset) for transmitting and receiving data, and the module units 12C, 12D, 12H and 12I connect to bus 11A (first subset) for receiving data only. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Birkedahl and Games to include one of the processing nodes being normally connected for only receiving on a second subset of data communication lines and another of said processing nodes being normally connected for only receiving on said first subset of said data lines to provide bus communication architecture that provides reliable and redundant data communication with a high bandwidth and also improves the safety and communications efficiency of the system (Birkedahl, Abstract).

6. As to independent claim 16, Games discloses a network topology backplane bus architecture comprising:

a plurality of processing nodes transmitting and receiving data communications (col. 3, lines 38-60 and Fig. 2: communication units J, K, L and M, and each unit links to three channels);

a plurality of independent data communication networks formed of a plurality of independent data communication lines, a subset of said data communication networks extending between ones of said plurality of processing nodes (col. 3, lines 38-60, col. 5,

line 24 – col. 6, line 67, and Fig. 3: three channels designated A, B, and C and communication units J, K, L and M, and each unit links to three channels);

a first subset of ones of said data communication lines allocated to a first of said processing nodes for transmitting and receiving data communications, said first subset of said data communication lines further allocated to a second of said processing nodes (col. 3, lines 38-60, col. 5, line 24 – col. 6, line 67, and Fig. 3);

a second subset of ones of said data communication lines allocated to said second processing nodes for transmitting and receiving data communications, said second subset of said data communication lines further allocated to said first processing nodes (col. 3, lines 38-60, col. 5, line 24 – col. 6, line 67, and Fig. 3);

However Games does not explicitly disclose monitoring data communications transmitted on said first subset and second subset of said data communication lines and receiving data communications as a function of said monitoring of said data communications transmitted on said first subset and second subset of said data communication lines. Birkedahl discloses each module has a network interface controller (NIC), which is a transceiver coupled to each system bus 11, and each transceiver is capable of receiving signals on the associated system bus and of communicating these signals to the internal NIC components (col. 4, line 65 – col. 5, line 15). In addition, Birkedahl discloses each module can monitor the communications of all other participating modules, the heart beat monitor of each NIC monitors the operation of microcontroller of NIC (col. 5, lines 34-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the

teachings of Birkedahl and Games to include monitoring data communications transmitted on said first subset and second subset of said data communication lines and receiving data communications as a function of said monitoring of said data communications transmitted on said first subset and second subset of said data communication lines. Birkedahl suggests that monitoring the flow of data on the buses (data communication lines) would identify the condition and take appropriate actions such as disabling transmissions to prevent transmissions of corrupted data.

7. Dependent claims 2-15, 17-29, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Games and Birkedahl as discussed in claims 1, 16, 30 and 34 above and further in view of Baker et al., U.S. Patent No. 5,325,517.

8. As to dependent claims 2-3, 18, 20, 25-26 and 32-33, however, Games and Birkedahl do not disclose ones of the independent data communication lines comprise a first independent data communication network and different ones of the independent data communication lines comprise a second independent data communication network. In the same field of endeavor, Baker discloses a prior art IBM System/88 module, plural modules interconnected by high speed data interconnections and plural modules interconnected via a network in a fault tolerant environment (col. 4, line 66 – col. 5, line 2, and col. 22, lines 11-67). Thus, it would have been obvious to one of the ordinary skill in the art at the time of the invention was made to combine the teaching of Games and Baker to include ones of the independent data communication lines

comprise a first independent data communication network and different ones of the independent data communication lines comprise a second independent data communication network in order to share information.

9. As to dependent claim 4, Games, Birkedahl, and Baker (Games-Birkedahl-Baker) disclose the one of the processing nodes transmitting and receiving on a first subset of the data communication lines utilizes the first subset of the data communication lines for local communication within the processing node (Baker, col. 23, line 8 – col. 24, line 36: Baker discloses ones of the independent data communication lines comprise a first independent data communication network and different ones of the independent data communication lines comprise a second independent data communication network in order to share information).

10. As to dependent claim 5, Games-Birkedahl-Baker disclose one of the processing nodes transmitting and receiving on a first subset of the data communication lines further utilizes the first subset of the data communication lines for broadcasting transmissions to another of the processing nodes (Games, col. 5, line 24 – 6, line 67, and Fig. 3 and 5).

11. As to dependent claim 6, Games-Birkedahl-Baker disclose one of the processing nodes transmitting and receiving on a first subset of the data communication lines further utilizes the first subset of the data communication lines for receiving data

transmission from another of the processing nodes (Games, col. 5, line 24 – 6, line 67, and Fig. 3 and 5).

12. As to dependent claim 7, Games-Birkedahl-Baker disclose one of the processing nodes transmitting and receiving on a first subset of the data communication lines is one of a plurality of the processing nodes transmitting and receiving on the first subset of the data communication lines (Games, col. 5, line 24 – 6, line 67, and Fig. 3 and 5).

13. As to dependent claims 8, 19, 21, and 27, Games-Birkedahl-Baker disclose each of plurality of processing nodes transmitting and receiving on the first subset of the data communication lines are co-located in a first resource enclosure (Baker, col. 5, lines 15-18, col. 18, line 66 – col. 19, line 33, col. 27, line 22 – col. 28, line 66, and col. 46, line 66 – col. 47, line, 11 and Fig. 7-9; units (processing nodes) may reside within a single module enclosure in a fault tolerant system).

14. As to dependent claims 9 and 22, Games-Birkedahl-Baker disclose each of plurality of processing nodes transmitting and receiving on the first subset of the data communication lines time-share the data communication lines with others of the plurality of processing nodes transmitting and receiving on the first subset of the data communication lines (Games, col. 4, line 57 – col. 5, line 23).

15. As to dependent claim 10, Games-Birkedahl-Baker disclose each of plurality of processing nodes transmitting and receiving on the first subset of the data communication lines time-shares the data communication lines in synchronization with others of the plurality of processing nodes transmitting and receiving on the first subset of the data communication lines (Games, Abstract and col. 4, line 57 – col. 5, line 23).

16. As to dependent claim 11, Games-Birkedahl-Baker disclose the processing node transmitting and receiving on the second subset of the data lines and receiving on the first subset of the data lines utilizes the second subset of the data communication lines for local communication with the processing node (Baker, col. 23, line 8 – col. 24, line 36: Baker discloses ones of the independent data communication lines comprise a first independent data communication network and different ones of the independent data communication lines comprise a second independent data communication network in order to share information).

17. As to dependent claims 12 and 31, Games-Birkedahl-Baker disclose the processing node transmitting and receiving on the second subset of data communication lines further utilizes the second subset of the data communication lines for broadcasting transmissions to another of the processing nodes (Games, col. 5, line 24 – 6, line 67, and Fig. 3 and 5).

18. As to dependent claims 13 and 17, Games-Birkedahl-Baker disclose one of the processing nodes supports different ones of flight critical functions (Games, col. 3, lines 39-60).

19. As to dependent claims 14, 23, and 29, Games-Birkedahl-Baker disclose one or more of the processing nodes supporting one of the flight critical functions is duplicated in one or more additional ones of the processing nodes (Games, col. 3, lines 39-60).

20. As to dependent claims 15, 24, and 28, Games-Birkedahl-Baker disclose one of the processing nodes supporting the one of the flight critical functions is located in a first resource enclosure; and at least one of the additional processing nodes supporting the one of the flight critical functions is located in a physically isolated second resource enclosure (Baker, col. 5, lines 15-18, col. 18, line 66 – col. 19, line 33, col. 27, line 22 – col. 28, line 66, and col. 46, line 66 – col. 47, line, 11 and Fig. 7-9, and Birkedahl, col. 6, lines 13-60 and Fig. 5: it could be desirable to separate the functional modules and concentrate the similar modules, for example, all the processor modules would reside in module unit 13X, all the I/O modules would reside in module unit 13Y, and all the database modules would reside in module unit 13Z. Therefore, Birkedahl's system permits a large degree of flexibility in system design).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau Nguyen whose telephone number is (571) 272-4092. The Examiner can normally be reached on Monday-Friday from 8:30 am to 5:30 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Heather Herndon, can be reached at (571) 272-4136.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. On July 15, 2005, the Central Facsimile (FAX) Number will change from 703-872-9306 to 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chau Nguyen
Patent Examiner
Art Unit 2176

William L. Bashore
WILLIAM BASHORE
PRIMARY EXAMINER
1/19/2006